

application. Applicant's attorneys have labored hard to bring this application into allowable condition. Claims 1 through 30 have been canceled because it was believed a fresh approach was needed. Applicant's attorneys have tried to address the 35 U.S.C. §112 issues seriously and sincerely, and respectfully believe the Office is mistaken with respect to concluding previous claims 3 and 23 (claiming a toughness parameter) would have required undue experimentation. The assignee, IBM, is a world class company and its laboratories adhere to exacting engineering standards. All tests are run in accordance with engineering society standards. Note that the cited TANG et al reference recites the standard for core/shell particles as EP-A-0 578 613. The tests conducted for the present application have been performed according to the same rigorous standards. It is sincerely and respectfully believed that Applicant should be given the same respect the Office gives other applicants and patentees. In addition, unless there is anything in the specification leading one to an adverse conclusion, Applicant's statements should be given proper weight and respect. Therefore, attorneys for Applicant traverse the objections and rejections based upon 35 U.S.C. §112.

Reconsideration of the above-identified patent application is respectfully requested in view of the foregoing amendments and following remarks. The original claims 1 through 30 have been canceled. Claims 31 through 70 have been added and remain in this application.

The encapsulant of this application has been designed to function as a substance that is used between an integrated circuit chip and a ceramic or organic substrate in flip-chip-attach (FCA) encapsulation techniques. FCA encapsulants are currently used on ceramic substrates. The present invention includes the use of organic substrate materials. For organic substrates, the pre-cure viscosity of the encapsulant must be low, and the coefficient of thermal expansion (CTE) must be approximately three times that of ceramic materials (i.e., 20 ppm/degree C. vs. 6.5 ppm/degree C). The higher CTE causes a greater mismatch between chip and substrate, requiring that the encapsulant be tougher in withstanding thermal cycling. Therefore, Applicant has claimed the toughness of his substance that his experiments have produced. Unless there is anything in the specification blatantly appearing to suggest Applicant could

not have achieved these results, the Office cannot respectfully interpose its own, unsupported conclusions to the contrary.

The Office additionally has been unfair to Applicant by citing numerous pieces of art without choosing one or two most pertinent references. This, Applicant respectfully suggests, is contrary to Office procedure. The Office admits, for example, that the HANYU et al reference does not teach the purpose of the invention. This being the situation, it is respectfully not proper to include this reference either under 35 U.S.C. §102, or as a reference under a 35 U.S.C. §103 rejection. Applicant now recites in the claims the purpose for which the substance is being used. In addition, HANYU et al does not show the invention as previously claimed either in the 35 U.S.C. §102, or the 35 U.S.C. §103 sense. This is particularly egregious, since it appears to suggest a "shot gun" examination approach.

With regard to the rejection based upon the TANG et al reference, please note that TANG et al uses a cross-linked polymer for the shell and claims a $T_g < 0^\circ\text{C}$. This is exactly opposite to what Applicant is doing. Again, the use of this reference respectfully reflects the "shot gun" review. Please

note in Applicant's specification on page 3: "Adding the soft, second-phase particles, however, often significantly increases the viscosity of the encapsulant, and decreases the glass transition temperature, T_g .

"The present invention comprises materials that increase the toughness of the encapsulant up to fifty percent, without excessive change to the viscosity and glass transition temperature, T_g ."

With all due respect, it is obvious the TANG et al reference is doing the exact opposite of Applicant's invention (i.e., is teaching away from the invention).

A similar argument may be applied to the USUI et al reference. The approach taken by both USUI et al and TANG et al is that used for ceramic substrates, whereas Applicant's use of organic substrates requires an opposite approach.

The detailed review that the Office has given Applicant is sincerely appreciated, but Applicant's attorney is concerned by

the lack of pertinence that the cited references appear to have for the claimed invention.

Examiner Moore is respectfully asked to reread the introduction to the specification again, so that the particular problem which Applicant is trying to solve is clear.

In view of the foregoing amendments and remarks, Applicant respectfully requests claims 31 through 70 be allowed and the application be passed to issue.

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